ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	IB Docket No. 95-117
Streamlining the Commission's	)	
Rules and Regulations for Satellite	)	
Application and Licensing Procedures	)	

COMMENTS OF HUGHES NETWORK SYSTEMS, INC.

Ever since the Commission licensed its first commercial satellite in the early 1980s, it has been careful to monitor trends in the industry in order to ensure that its rules foster, not hinder, growth within the satellite industry. As the satellite industry has evolved, the Commission has strived to ensure that its rules keep pace. Now the time has come again for the Commission to update its rules in response to changing conditions. Nowhere is this more true than in the case of the licensing of Very Small Aperture Terminals ("VSATs"), where the Commission's rules envision an industry where operators "build out" and then operate their VSAT networks. This does not, however, reflect the realities of the industry where networks evolve along with business needs.

Hughes Network Systems, Inc. ("HNS") is the nation's largest provider of VSATs, satellite antennas which are sized generally 2.4 meters or less. Companies in varied industries and of varied sizes use VSAT networks as private communications systems for a multitude of uses, including credit card verification, inventory control, video conferencing and vendor communications. HNS VSAT customers include Amoco Oil Company, E.D. Jones brokerage houses, Wal-Mart Stores, Staples office supplies, Service Merchandise, Ford Motor Company and scores of others.

These customers use their VSATs to link remote locations to each other, to central offices and to outside suppliers. Wal-Mart Stores, for example, uses its VSAT system for a variety of purposes. The system tracks inventory: as an item is loaded off the truck and into a store, it is scanned into the system and relayed to Wal-Mart's headquarters in Bentonville, Arkansas; when an item is scanned at the register at the time of sale, the inventory count is also sent to headquarters over the VSAT system, and Wal-Mart can then direct its supplier to deliver just-in-time inventory to the store that needs it. Indeed, many of Wal-Mart's suppliers are themselves now on the Wal-Mart VSAT network, able to access the inventory count and arrange for timely inventory delivery without the need for involvement by Wal-Mart. Wal-Mart can also perform credit-card verification through the VSAT system. One of its most famous uses was Sam Walton's weekly video conference with all Wal-Mart employees in all the stores, conducted via the VSAT network.

Just as Wal-Mart's business needs change over time, so do its communications needs. Every time it opens a new store, it needs to add another VSAT antenna to its network. Rules that operate on a "build out" paradigm, such as the current 48-month deadline for VSAT construction, impose artificial limitations upon the growth of VSAT networks. Eliminating this deadline is an important step towards tailoring the rules to the needs of the industry.

Several of the proposed technical standards and rules, as written, also do not reflect operating realities or requirements. In addition, streamlining the reporting and other VSAT licensing requirements, as proposed in the *Notice*, will lower the users' cost of operation and will, in turn, make VSATs more competitive with other communications

technologies, such as landline telephone systems, for which there are virtually no regulatory burdens.

HNS applauds the Commission's willingness to work closely with the satellite industry to tailor its rules to the industry's needs, and it offers the following comments on specific proposed changes.

1. *Elimination of the Construction Deadline*

The Commission has proposed to eliminate the 48-month construction deadline for VSATs, and instead allow construction during the entire ten-year license term. *Notice* at ¶ 19. As discussed above, VSAT networks are not "built out"; users constantly add remote sites to their businesses and therefore need antennas for those new locations. Requiring special authority for each new antenna after 48 months is wasteful and only slows down the aggressive build-out of systems, contrary to the Commission's stated goals. The only relevant limitation upon the construction of VSAT antennas is the license term, and, as the Commission has proposed, construction should be allowed throughout the license period.

Moreover, the Commission's interest in the "build out" of these private systems may be misplaced. Unlike other regulated areas, such as broadcast, an FCC license to operate a VSAT network does not preclude the introduction of a competitor's system, nor does it involve the initiation of service to the public.

2. *Reporting the Number of VSAT stations only at License Renewal*

The current requirement that VSAT users submit annual reports specifying the number of VSAT stations actually constructed imposes unwarranted burdens on the industry. If the Commission needs to continue to monitor growth of the VSAT industry -- and its regulatory functions do not seem to require such information -- it can do so through the

renewal applications filed every ten years or by requesting information from licensees when the need arises. *Notice* at ¶ 20.

3. *Technical Amendments to Section 25.134*

The Commission's technical amendments to Rules 25.134, 25.115, and 25.117, and the addition of Rule 25.118, respond to industry concerns, but in some cases are ambiguous and confusing.

A. Proposed Rule 25.134

Proposed Rule 25.134(a) contains a hidden flaw in its limitation of the maximum hub EIRP[1/] to 78.3 DBW for routine processing. *See Notice* at ¶ 21, Appendix B at 26. The proposed rule leaves ambiguous whether this limitation applies on a per carrier or total basis; past Commission and industry practice indicates, however, that the limitation should apply *per carrier*.

Limiting routine processing to hub stations with an aggregate, or multi-carrier, power level of 78.3 DBW is unnecessary, as a hub station has no potential to present interference problems as long as it meets the Rule's limitation of maximum power density at the antenna input flange of -14.0 dBW/4 kHz. The maximum power for routine processing should therefore be defined in Proposed Section 25.134(a) as "maximum input power densities of -14.0 dBW/4 kHz and maximum hub EIRPs of 78.3 dBW per carrier."

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1 HNS agrees with the Commission's proposal to amend Section 25.134 by changing "maximum outbound downlink power densities" and "satellite carrier power densities," and replacing these terms with the more accurate "maximum outbound downlink EIRP densities" and "satellite carrier EIRP densities." *Notice* at ¶ 21.

B. Proposed Rule 25.115

The Commission has recognized that Sections 25.115(c)(1) and (c)(5), which require applicants seeking authority to construct and operate VSAT networks to include a general narrative section describing the applicant and the system and a point of contact, are redundant, as identical information is requested on the application forms. *Notice* at ¶ 22. HNS agrees with this analysis, but asks that the Commission clarify where in Form 312 this information is requested.[2]

C. Proposed Rules 25.117 and 25.118

The Commission has proposed to adopt a system of notification and authorization, requiring prior authorization only for "major modifications" -- those changes that increase the potential for interference. *Notice* at ¶ 23. Minor modifications to earth stations (those changes that do not have the potential to increase interference to adjacent satellites) can be made without Commission authorization, subject to notification within 30 days of the change. Proposed Rules 25.117 and 25.118, which are consistent with Commission practice in other areas, *see, e.g.*, Part 22 of the Commission's Rules, will reduce the regulatory burden on VSAT licensees and allow initiation of service in a timely and efficient manner.

Proposed Rule 25.118 is, however, confusing in three respects that should be clarified.

1. It is not clear whether Section 25.118(a) would require *no* notification of electrically identical replacements, or *no prior* notification of electrically identical replacements. If the Commission intended that these replacements could be made without

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2 It is not clear whether Question 24 requests this information in the "comment box" or elsewhere.

any notification -- and there does not appear to be any reason to require notification -- then the Commission should substitute the word "prior" with "any" in order to clarify Proposed Rule 25.118(a).

2. Section 25.118(c) enumerates the facility changes that will be considered "major" and therefore require prior authorization. Increases in transmitter power or EIRP (Section 25.118(c)(1), (2)) should not require prior authorization unless the increase results in an increase in EIRP *density*, as it is only an increase in EIRP density that increases the risk of interference. HNS therefore proposes that Section 25.118(c)(1) be amended to read "increase in EIRP density," and that Section 25.118(c)(2) be deleted in its entirety, leaving increases in transmitter power and EIRP subject to notification.

3. Section 25.118(c)(5), which defines "a change or addition to antenna facilities" as a major amendment requiring prior authorization, is also ambiguous. When read in conjunction with Section 25.118(a), it appears that any alteration to antenna facilities beyond an electrically identical equipment replacement would be considered a major modification. Moreover, it is not clear from this language whether Section 25.118(c)(5) applies to individual VSAT antennas or hub earth stations only.

First, Section 25.118(c)(5) should apply solely to hub stations; "changes or additions" to individual VSAT antennas should not be considered major modifications. Limiting Section 25.118(c)(5) to hub stations is consistent with the Commission's blanket licensing of individual VSAT antennas, which does not require prior notification of placement of VSAT antennas. The only change or alteration to VSAT antennas that should require any notification is an increase in power density above the limits specified in the

blanket license, which has the potential to increase interference and would require prior authorization per Proposed Section 25.134(a).

Second, changes or alterations to hub stations that would increase the EIRP density or result in an increase in side lobe power in the direction of a neighboring satellite should require prior authorization, but minor changes, such as installation of auto-tracking or moving from a two-port to a four-port feed, should require notification only. Proposed Section 25.118(c)(5) should therefore read "changes or alterations to hub earth stations that result in an increase in EIRP density or an increase in side lobe power in the direction of a neighboring satellite."

D. Application of Existing Power Density Limits to Wideband Digital Carriers

In an attempt to protect future VSAT services from interference, the Commission has proposed to extend the existing power density limits for VSATs to all digital carriers. *Notice* at ¶ 25. While HNS shares the Commission's concern that wide bandwidth carriers not interfere with existing VSAT services, the blanket 6.0 dBW/4.0 kHz EIRP density limit placed upon these carriers will require the use of larger-than-necessary VSAT antennas and a concomitant and unnecessary increase in cost to the user.

While the Commission may not yet have policies or procedures concerning wideband digital carriers, a significant number of these carriers are currently either in use or proposed for use with VSAT data networks. Conformance to the current downlink EIRP density limit for compressed digital video signals will require larger VSAT antennas than are

necessary (or currently in use) for the data carriers in the network.[3/] Use of larger antennas will, in turn, impose an undue economic burden on VSAT networks incorporating compressed digital video, due to both the cost of the larger antennas themselves and the increased local zoning regulation placed upon them.[4/] HNS believes that adoption of a procedure allowing wideband digital carriers to exceed the downlink EIRP density limit is warranted.

Those wideband digital carriers occupying a full transponder and operating at or near transponder saturation should continue to be treated separately. HNS recommends that the Commission use the standards used for similar video full-transponder services for these carriers. *See* Proposed Section 25.211(d). With the availability of higher-power spacecraft and the correspondingly higher transponder EIRP, the EIRP density of such carriers will typically exceed the current 6.0 dBW/4.0 kHz downlink limit applied to VSAT carriers. Requiring carriers to meet this downlink limit will result in inefficient use of the available transponder power. Furthermore, interference problems can be coordinated between wideband digital carriers, as they should be relatively few in number.

4. *Adoption of the New Multipart Form 312*

The elimination of several different filing forms, many of which are not tailored to the satellite industry, can only benefit both the Commission and industry. *See*

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3. The majority of these wideband carriers are compressed digital video carriers using QPSK modulation; at this time there are no digital video products using BPSK modulation. The higher modulation density of QPSK requires a carrier-to noise ratio (C/N) at least 3 dB higher than that required for the BPSK carriers used for data transmission in the VSAT network proper. In practice, some of the compressed digital video systems use less error-correction coding than the VSAT systems and thus require still higher values of C/N.

4. As the Commission has recognized in another proceeding, larger antennas are often subject to greater local regulation. *See* Preemption of Local Zoning Regulation of Satellite Earth Stations, FCC 95-180 (May 15, 1995) (Notice of Proposed Rulemaking)

Notice at ¶¶ 26-28. In addition, the Commission has proposed to eliminate the narrative section describing the proposed applicant and system, which it has found to be redundant. *Id.* at ¶ 22. These proposals reduce paperwork and confusion and allow greater flexibility to the Commission.

The new form, however, like some of the proposed rules, requires information not relevant to the Commission's interference analysis. In particular, Form 312 Schedule B requests data identifying the maximum EIRP, EIRP density, and total EIRP. As HNS explained in its comments about minor modifications, see infra p. 6, the only parameter of these three that is relevant to an interference analysis is EIRP density. HNS therefore suggests that columns B15 and B18, and C15 and C18 be eliminated from Schedule B. In addition, a column should be created to list the carrier, but with an instruction that for identical carriers, the applicant may provide only the number of such carriers rather than identifying each by name.

HNS also proposes that the first page of Form 312 contain a section to indicate which schedules have been filed, so that the reader can easily identify the purpose of the filing (e.g. transfer of control modification), and whether the proper schedules have indeed been attached.

5. *Interference Analysis using the ASIA Database*

HNS recognizes that the Commission's current database is now obsolete, and agrees that it should be updated. *Notice* at ¶ 29-30. The proper licensees to provide this information, however, are not the VSAT licensees, but the satellite space station operators, who have access to the required engineering analyses regarding the characteristics of the satellite networks.

The ASIA computer program itself must also be updated and should be streamlined, though not radically changed. Information provided by satellite operators should not be classified, in order to allow satellite operators full access to the engineering analyses.

6. *Protection for Global Positioning System*

Pursuant to a memorandum of understanding between NTIA, the FAA and the FCC, the Commission states it "will propose adopting" the out-of-band emission standards for MSS user transmission that are to be proposed by RTCA, Inc. in its final report for the protection of global navigation satellite system ("GNSS") receivers. *See Notice* at ¶ 34. Adoption of the report's recommendations is at present premature, as it has not been received or reviewed by the Commission or the satellite industry. Presumably this report will be the subject of a further notice of proposed rulemaking once it has been made available and its contents can be subject to evaluation by the public. HNS may participate at that time, for it is possible that certain proposals could have an adverse effect on the use of VSAT technology.

Respectfully submitted,

HUGHES NETWORK SYSTEMS, INC.

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October 4, 1995
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TECHNICAL CERTIFICATION
of
JOHN A. STEIN

1. My name is John A. Stein. I am the Principal Engineer at Hughes Network Systems, Inc. I provide technical support to our Satellite Networks Division.

2. I have read the foregoing Comments of Hughes Network Systems, Inc. and hereby certify that the technical portions thereof are accurate to the best of my knowledge.

Dated: October 3, 1995

John A. Stein

CERTIFICATE OF SERVICE

I certify that I have this 4th day of October, 1995 caused to be delivered by hand the foregoing Comment of Hughes Network Systems, Inc. to the following:

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